

CAAP Quarterly Report

Date of Report: April 30, 2016

Contract Number: DTPH5614-H-CAP06

Prepared for: Department of Transportation

Project Title: Robust Anomaly Matching for ICIPs: Reducing Pipeline Assessment Uncertainty Through 4-Dimensional Anomaly Detection and Characterization

Prepared by: Colorado School of Mines

Contact Information: John P. H. Steele, jsteele@mines.edu , 303-273-3663

For quarter period ending: April 30, 2016

Business and Activity Section

Generated Commitments –

- o During this period, we were approached by One Bridge Solutions, a software development and data management company with experience in the oil and gas industry. They asked us to team with them on development of an anomaly matching and assessment tool that uses standard ILI box data. A contract was signed and CSM provided support to their development effort.
- o Requested no-cost extension to August 31, 2016.

Status Update of Past Quarter Activities –

- o Devised a method to align raw pig signals as images
 - Handles velocity excursions
 - Able to align inspections without first matching welds
 - Should offer excellent results if welds aligned before running
- o Developed a method to match boxed and called out anomalies across inspections
 - Assumes welds are associated and joints are matched
 - Matches individual anomalies and anomalies to clusters
 - Returns probability of a match
 - best match established after fewer than 10 iterations
 - Probability of match is slow to converge
 - Takes a long time to establish how good a match is, e.g., hundreds of iterations

Description of any Problems/Challenges –

- o We still have no raw data for algorithm development and test
 - Continue to network in order to get data
 - We are aware of data to be collected this summer
 - collaboration of PRCI, i2i, and Chevron
- o Did not address the multiple matches issue that occurred with velocity transitions

- Waiting on real data
 - Don't know how significant a problem this is in practice
- o Did not evaluate the difference between velocity corrected and vanilla seqSLAM
 - Waiting on real data

Planned Activities for the Next Quarter –

- o Write and submit draft and final report.